

1 What is claim is:

2 1. A modular gauge assembly for holding a plurality of  
3 modular block assemblies with gauge elements being selectively  
4 mountable in a plurality of spaced recesses of a tufting machine  
5 gauge bar, the modular block assembly comprising:

6 (a) a modular block having a front surface, a pair of side  
7 surfaces opposed to each other, a rear surface opposite to the  
8 front surface, a top surface and a bottom surface;

9 (b) a detent extending from a surface of the modular block  
10 interfitting with a recess in the gauge bar;

11 (c) a plurality of vertical parallel slots horizontally  
12 spaced between the opposing side surfaces of the modular block  
13 for receiving gauge elements;

14 (d) at least one opening extending horizontally between the  
15 opposing side surfaces of the modular block; and

16 (e) a securing pin for slidably engaging said at least one  
17 opening.

18 2. The modular gauge assembly of claim 1 further  
19 comprising a plurality of gauge elements having a distal end and  
20 a proximal end with an opening therein, the proximal ends of said  
21 gauge elements being received in the vertical parallel slots of  
22 the modular block and the securing pin passing through the  
23 openings in the proximal ends of the plurality of gauge elements.

24 3. The modular gauge assembly of claim 2 wherein the  
25 detent comprises a vertically disposed elongated tab separated by  
26 a channel into an upper portion and a lower portion.

1           4.    The modular gauge assembly of claim 1 wherein the  
2 detent extends from the rear surface.

3           5.    The modular gauge assembly of claim 1 wherein the  
4 detent extends approximately from the center of the bottom  
5 surface.

6           6.    The modular gauge assembly of claim 5 wherein the  
7 modular block has a first forward plurality of spaced vertical  
8 slots separated by vertical walls with openings therein and a  
9 second rearward plurality of spaced vertical slots separated by  
10 vertical walls with openings therein.

11           7.    The modular gauge assembly of claim 6 wherein the  
12 modular block has a first opening extending between the opposing  
13 side surfaces of the modular block and passing through the  
14 openings in the vertical walls separating the forward plurality  
15 of spaced vertical slots and a second opening extending between  
16 the opposing side surfaces of the modular block and passing  
17 through the openings in the vertical walls separating the  
18 rearward plurality of spaced vertical slots.

19           8.    The modular gauge assembly of claim 1 wherein a  
20 fastener is used to pass through the detent and secure the  
21 modular block assembly to the gauge bar.

22           9.    The modular gauge assembly of claim 1 wherein the gauge  
23 elements comprise loopers.

24           10.   The modular gauge assembly of claim 7 further  
25 comprising a plurality of gauge elements having a distal end and  
26 a proximal end with an opening therein, the proximal ends of said

1 gauge elements being received in the vertical parallel slots of  
2 the modular block and the securing pin passing through the  
3 openings in the proximal ends of the plurality of gauge elements.

4 11. The modular gauge assembly of claim 1 wherein said  
5 gauge elements are disposed in a plane normal to the length of  
6 the securing pin.

7 12. In a tufting machine a modular gauge assembly  
8 comprising:

9 (a) an elongated gauge bar with a straight side extending  
10 along at least a portion of the length of the gauge bar, the  
11 straight side portion of the gauge bar having a plurality of  
12 spaced recesses defined therein;

13 (b) a plurality of modular blocks for engaging the straight  
14 side of the gauge bar, each modular block having a detent which  
15 aligns with a recess in the gauge bar and having:

16 (i) a rear surface;

17 (ii) spaced parallel tufting machine gauge elements  
18 protruding from the modular block, each gauge element having a  
19 proximal end and a spaced distal end, the proximal ends of the  
20 gauge elements having an opening for fixing a plurality of the  
21 gauge elements to the block with a single securing pin;

22 (iii) a hole in the detent; and

23 (iv) a fastener utilizing the hole in the detent for  
24 removably securing each of the modular blocks to the gauge bar.

25 13. The modular gauge assembly of claim 12 wherein the  
26 detent of each mounting block comprises a raised member defined

1 on the rear surface of the modular block, said raised member  
2 being interfitted with the spaced recesses in the gauge bar.

3 14. The modular gauge assembly of claim 13 wherein the  
4 raised member is split to accommodate restraining surfaces.

5 15. A process of producing a tufting machine, the tufting  
6 machine having a tufting zone therein, said process comprising  
7 the steps of:

8 (a) forming a plurality of spaced, parallel, straight  
9 recesses across one side portion of an elongated gauge bar of the  
10 tufting machine;

11 (b) installing the gauge bar transversely of the tufting  
12 machine in the tufting zone;

13 (c) producing a plurality of modular blocks where each block  
14 has opposed parallel side surfaces a bottom surface, a rear  
15 surface, and a detent;

16 (d) forming on the rear surface of each modular block, an  
17 elongated tab having approximately the width of one of the  
18 recesses on the gauge bar, said tab having a hole therein;

19 (e) removably attaching gauge elements by their proximal end  
20 portions in each of the modular blocks, in parallel relationship  
21 to said side surfaces so that distal end portions of the gauge  
22 elements protrude from the modular blocks; and

23 (f) adjacently securing the modular blocks on the side  
24 portion of the gauge bar by interfitted the tab of each modular  
25 block in a recess on the gauge bar and using a fastener  
26 associated with the hole on the tab of each modular block.

1           16. The process of claim 15 including the step of removing  
2 a selected modular block having a damaged gauge element and  
3 replacing said block with a modular block having only undamaged  
4 gauge elements.

5           17. The process of claim 16 wherein a damaged gauge element  
6 is removed from the selected modular block, and replaced with a  
7 new gauge element.

8           18. The process of claim 15 wherein the step of securing  
9 the modular blocks to the gauge bar includes the step of resting  
10 the bottom portion of the modular block on the guide bar  
11 inserting the detent of the modular block in a recess of the  
12 gauge bar and passing a fastener through an opening in the detent  
13 into a receiving hole in the recess on the gauge bar.

14           19. In a tufting machine a modular gauge assembly  
15 comprising:

16           (a) an elongated gauge bar with a straight side  
17 extending along at least a portion of the length of the gauge  
18 bar, the straight side portion of the gauge bar having, a  
19 plurality of spaced recesses defined therein, and an opening  
20 defined within the recessed portion of the gauge bar;

21           (b) a plurality of modular blocks for engaging the  
22 straight side of the guide bar, each modular block having a  
23 detent which aligns with a recess in the gauge bar and having:

24                   (i) a rear surface;

25                   (ii) spaced parallel tufting machine gauge  
26 elements protruding from the modular block, the modular block

1 having a row of gauge element openings for receiving the gauge  
2 elements in the block;

3 (iii) screw pin openings corresponding to each  
4 gauge element, each of the openings capable of receiving a screw-  
5 pin to secure the gauge element to the block;

6 (iv) a receiving hole on the detent of the  
7 receiving block;

8 (c) a fastener passing through the opening on the gauge bar  
9 into the receiving hole on the corresponding modular block for  
10 removably securing the modular blocks to the gauge bar.

11 20. The modular gauge assembly of claim 21 wherein the  
12 detent of each mounting block comprises a raised member defined  
13 on the rear surface of the modular block, said raised member  
14 being sized and shaped to be received within one of the spaced  
15 recesses in the gauge bar.

16 21. A modular block assembly for use in a tufting machine  
17 comprising:

18 (a) a modular block having a front surface, a pair of  
19 opposed side surfaces, a rear surface, a top surface and a bottom  
20 surface;

21 (b) a detent extending from a surface of the modular  
22 block and having an opening therein;

23 (c) a plurality of vertical parallel slots separated by  
24 vertical walls having openings therein, and spaced between the  
25 opposing side surfaces of the modular block;

1 (d) a plurality of gauge elements having a distal end  
2 and a proximal end with an opening therein, the proximal ends of  
3 said gauge elements being received in the vertical parallel slots  
4 of the modular block;

5 (e) an opening extending laterally between the opposing  
6 side surfaces of the modular block;

7 (f) a securing pin extending through the lateral  
8 opening in the opposing sided surfaces, the opening in the  
9 proximal ends of the gauge elements, and the openings in the  
10 vertical walls.